Remarks

The Applicants have amended Claims 12-15 to change the ranges of Mn. In particular, Claim 12 now recites that the amount of Mn is 3.01% or less. Claim 13 now recites 1.91% or less of Mn. Claim 14 recites 4.10 to about 12% of Mn. Finally, Claim 15 recites about 2 to 3.83% of Mn. Support is inherently present by virtue of the original claimed ranges. Nonetheless, additional support may be found for each of Claims 13-15 as follows:

3.01% Mn in steel number 30 in Table 1;

1.91% of Mn in steel number 7 in Table 5;

4.10% of Mn in steel number 34 in Table 10 and steel number 44 in Table 12; and

3.83% of Mn in steel number 2 in Table 14A.

Entry of the above amendments into the official file and consideration on the merits is respectfully requested.

Claims 12, 15 and 16 stand rejected under 35 USC§103 over Espy. The Applicants respectfully submit that Espy fails to disclose, teach or suggest the subject matter of those claims.

With respect to Claim 12, it is important to control the strain-induced martensite index ($Md(\gamma)$) to be in a range of from -30 to 90 and to have a total elongation of 48% or more. This is achieved in part by controlling the amount of Mn such that it is 3.01% or less.

This is sharply contrasted to Espy which is directed to stainless steels used for manufacturing fasteners wherein a cold heading process is required. The resulting product is a cold forged product manufactured by rolling steel bars.

However, Espy is completely silent with respect to controlling the strain-induced martensite ($Md(\gamma)$) to be within a range of from -30 to 90 and is further silent with respect to achieving a total elongation of 48% or more. Thus, one skilled in the art would not look to Espy in the first place.

In any event, Espy teaches that the amount of Mn should be 4.0 to 11% to provide a balance with Cr and stabilization of an austenite phase. In that regard, Espy provides teachings that would lead one skilled in the art away from reducing the amount of Mn below 4% due among other things to the teachings in column 5 at lines 57-60 which refers to Table IV wherein it is stated that a manganese content of less than about 4% results in a transformation of austenite

to ferrite. Table IV of Espy in column 4 confirms such a transformation. Thus, one skilled in the art would have no incentive to modify the amount of manganese from the Espy steels to less than 4%. As noted above, the Applicants' claimed amount of Mn in Claim 12 is 3.01% or less. Hence, Espy is inapplicable to Claim 12.

With respect to Claims 15 and 16, essentially the same arguments apply even though the range of Mn is about 2% to 3.83%. Again, one skilled in the art would have no motivation to modify the minimum amount of Mn from Espy to less than 4% due to the aforementioned transformation of austenite to ferrite. Thus, Espy is also inapplicable to Claims 15 and 16. Withdrawal of the rejection is accordingly respectfully requested.

Claims 18 and 19 stand rejected under 35 USC§103 over the combination of Maehara with Espy. The Applicants respectfully submit, however, that Maehara fails to reverse the teachings of Espy away from the claimed ranges of Mn in Claims 12 and 15. Thus, the combination of Maehara with Espy is inapplicable. Withdrawal of the rejection is respectfully requested.

Claims 14, 16, 18 and 19 stand rejected under 35 USC§103 over the combination of Maehara with Espy and as evidenced by Holt. The Applicants respectfully submit that one skilled in the art would not make the combination, but in any event, the combination would still fail to provide disclosure, teachings or suggestions that would or even could lead to the subject matter of those claims.

The rejection frankly acknowledges that Espy does not disclose the amount of C+N in the austenite phase, whether the Md(γ) of the claimed equation is satisfied and does not disclose the inclusion of V. The Applicants agree. The rejection thus relies on inherency with respect to the amount of C+N in the austenite phase and whether the Md(γ) of the claimed equation is satisfied and relies on Maehara for the inclusion of vanadium. The Applicants respectfully submit, however, that these positions are in error.

First, with respect to inherency, it is necessary for the rejection to establish that the claimed properties or functions are "necessarily" present. It is not enough that they could be present, might be present or are even likely present. Such functions or properties must necessarily be present. The Applicants respectfully submit that Espy does not satisfy this high standard. The reason is that assuming *arguendo* similarities in structure and composition, the Applicants' claimed processes are completely different from those of Espy essentially for the

reasons as set forth above with respect to the rejection of Claims 12, 15 and 16. In that regard, the objectives of Espy versus those of the Applicants are completely different. As noted above, the Espy steels are stainless steels used to manufacture fasteners wherein a cold heading process is utilized and the product is a cold forged product manufactured by rolling a steel bar. There are nonetheless very few details as to the processes used by Espy. For example, column 3 refers to a "series of heats" prepared to establish properties of various compositions. Those "heats" were annealed and austenized. Annealing occurred at 788°C for four hours and austenization was applied at a temperature of 1,038°C for 15 minutes as recited in the heading of Table II. Other than that disclosure, there is little upon which one skilled in the art can understand the actual processes used by Espy.

This is sharply contrasted to the Applicants' processes such as those outlined in Example 3 as recited paragraph [0115] wherein slabs were heated to 1,250°C treated by hot rolling for 11 to 12 passes to hot roll to 3 to 4mm in thickness, annealed at 1,100°C for 1 minute, cold rolled at a temperature from room temperature to 300°C; and then finish annealed at temperatures ranging from 900°C to 1,300°C.

Those skilled in the art can readily see that the processes used by the Applicants and those of Espy are completely different. Also, those skilled in the art know that the properties and physical characteristics of steels are determined not only by composition, but also processes. Given the vast differences in the processes employed by the Applicants versus those of Espy, the Applicants respectfully submit that those skilled in the art would have an understanding that the physical properties of their steels would actually be likely different from those of Espy as opposed to being "necessarily" the same. The Applicants therefore respectfully submit that inherency has not been established. On this basis alone, the Applicants respectfully submit that Espy (in combination with Maehara) is inapplicable.

As noted above, the rejection also turns to Maehara for the teachings of the addition of V. However, there is a problem with that combination. Again, assuming *arguendo* the validity of the position that V is known to improve corrosion resistance in the same manner of Cr, Maehara also explicitly teaches in column 7 beginning at line 16 that:

> Ti, Zr, Nb, and V easily form nitrides and reduce the amount of N in solid solution which is effective for facilitating superplacticity, and therefore if possible it is better not to add them.

These teachings are critical when taken into context of the Applicants claimed range of Cr which is about 15 to about 35% versus the range of Cr as disclosed in Machara which is 15 to 30% and the range as disclosed by Espy which is 19 -24%. Those skilled in the art well know that if they want to increase corrosion resistance, there is ample room to employ more Cr as recited in the Applicants' claims wherein up to 35% of Cr can be employed.

More importantly, Maehara cautions those skilled in the art not to add V because of its demerits. As noted above, Maehara explicitly states that it is "better not to add" V (among others) to the steels "if possible." Given the equivalents of V and Cr as disclosed by Maehara, one skilled in the art would have no motivation to turn to the addition of V when the simple addition of more Cr is entirely possible and does not have the detrimental effects with respect to superplacticity. Hence, the Applicants respectfully submit that one skilled in the art would have no incentive to combine Maehara with Espy. Withdrawal of the rejection is respectfully requested.

Claims 12, 13, 15, 16, 18 and 19 stand rejected over Hauser. The Applicants respectfully submit that Hauser fails to provide disclosure, teachings or suggestions that would or could result in the subject matter of those claims.

As noted above with respect to Espy, the Applicants' Claim 12 as shown in Figures 1 and 2 have discovered the ability to control the strain-induced martensite index ($Md(\gamma)$) to be in a range of from -30 to 90 and a total elongation of 48% or more. Also, the Applicants' steels provide for the improvement of crevice corrosion resistance by providing Ni in the range of about 1 to about 3%.

This is sharply contrasted to Hauser which does not disclose, teach or suggest controlling the strain-induced martensite index or a total elongation of 48% or more. Moreover, Hauser provides an Ni content of 0.1 to less than 1% Ni. Thus, Hauser is inapplicable.

Further, Hauser provides motivation to those skilled in the art not to exceed 1% by virtue of its teachings in column 2 beginning at line 55 that the "low" nickel content is imposed for economic and ecological reasons. Given the high cost of nickel, those skilled in the art have every incentive to suppress the amount of nickel to the minimum amount that will provide its positive effects.

Further, Hauser limits the nickel content "intentionally" not only for economic reasons but also to limit the stress corrosion in a chloride media as taught in column 6 beginning at line

55. There thus can be no doubt that one skilled in the art would not have any motivation to vary the amount of nickel in an upward direction so that it will be 1% or more. Inasmuch as the Applicants claim a nickel content in Claim 12 of 1% to about 3%, Hauser would be inapplicable.

With respect to Claim 13, Hauser teaches an Mn content of 2 to less than 4%. This is contrasted to the Applicants claimed Mn content of 1.91% or less.

The Applicants respectfully submit that those skilled in the art would have no motivation to modify the Mn content to less than 2% because, as taught in column 6 beginning at line 49, "a minimum content of 2 is necessary for making the steel austenitic, while allowing the introduction of more than 0.1% of nitrogen, without exceeding the nitrogen solubility limit during solidification. Thus, the Applicants respectfully submit that one skilled in the art would be led in a direction away from the Applicants' claimed amount of 1.91% or less of Mn as recited in Claim 13.

With respect to Claim 15, the Applicants respectfully submit that Hauser is again inapplicable inasmuch as the Applicants' claimed range of Si is outside of the range taught by Hauser. In that regard, the Applicants employ 0.4% or less of Si. This is sharply contrasted to Hauser which has an Si content larger than 0.4% (and up to 1.2%). Hence, there is no overlap in these ranges.

Moreover, Hauser cautions those skilled in the art to ensure that the Si content is larger than 0.4% "to avoid excessive oxidation while slabs or blooms are being reheated" as recited in column 6, lines 44-45. Thus, those skilled in the art would have no motivation to modify the amount of Si to 0.4% or less with a reasonable expectation of success because of the potential for excessive oxidation. Thus, Hauser is inapplicable to Claims 15 (as well as 16, 18 and 19). Withdrawal of the rejection is accordingly respectfully requested.

Claims 14, 16, 18 and 19 stand rejected under 35 USC§103 over the combination of Maehara with Hauser. The Applicants respectfully submit that one skilled in the art would not combine Maehara with Hauser, but in any event, the combination would still fail to result in the subject matter of Claims 14, 16, 18 and 19.

Claim 14 recites that the Mn content is 4.1 to about 12%. This is completely outside of and in a direction away from that taught by Hauser. Specifically, Hauser teaches a range of Mn of 2% to 4%. However, Hauser cautions those skilled in the art that the "manganese content should not exceed 4% in order to avoid production difficulties." The Applicants therefore

respectfully submit that one skilled in the art would have no motivation to modify Hauser with a reasonable expectation of success. In that regard, Hauser explicitly cautions those skilled in the art that there will be production difficulties if the amount of Mn exceeds 4%. The Applicants completely defy those teachings and proceed in the opposite direction by employing 4.10% to about 12% Mn in Claim 14. Hence, Hauser is inapplicable. However, Maehara provides no teachings that would cure that deficiency. Moreover, there is no disclosure, teachings or suggestions in either reference with respect to the Applicants' controlling of the strain-induced martensite index to be in a range from -30 to 90 and/or a total elongation of 48% or more. As a consequence, one skilled in the art would not combine Maehara with Hauser and in any event, the combined teachings of both references would still fail to disclose, teach or suggest the subject matter of Claims 14, 16, 18 and 19. Withdrawal of the rejection is respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

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